

IN THE APPLICATION  
OF  
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AND  
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FOR A  
STRAIGHT HANDLE BATON WITH MUSHROOM CAP

# STRAIGHT HANDLE BATON WITH MUSHROOM CAP

## BACKGROUND OF THE INVENTION

### 1. FIELD OF THE INVENTION

5 The present invention generally relates to batons and, more particularly, to an expandable straight baton with a mushroom cap that may be converted into an expandable side handle baton.

### 2. DESCRIPTION OF THE RELATED ART

10 Law enforcement individuals, such as police officers, security personnel, or the like, commonly carry a number of items with them during their on duty rotations. One of the devices police officers often carry is a baton to offer them assistance during potentially threatening public encounters. During such encounters, the baton may be dislodged from the hands of the police officer and, being cylindrically shaped, may roll down an  
15 incline and be difficult to find after the encounter. It would be desirable for law enforcement individuals to have access to a baton with a handle that facilitates the ability to find the baton quickly after being dropped and/or dislodged. It would also be desirable for law enforcement individuals to have access  
20 to a baton equipped with elements capable of assisting them before and/or during threatening encounters.

The related art is represented by the following references of interest.

U.S. Patent Application Publication No. 2002/0163799 A1, issued on November 7, 2002 for Craig A. Kukuk, describes a multi-functional law enforcement tool. The Kukuk application patent does not suggest a straight baton with a mushroom cap according to the claimed invention.

U.S. Patent No. 1,066,540, issued on July 8, 1913 to George A. Smithwick, describes a combined club and flashlight. The Smithwick patent does not suggest a straight baton with a mushroom cap according to the claimed invention.

U.S. Patent No. 1,206,095, issued on November 26, 1916 to Joseph A. Coy, describes a baton with a light at one end. The Coy application does not suggest a straight baton with a mushroom cap according to the claimed invention.

U.S. Patent No. 1,489,305, issued on April 8, 1924 for Walter S. Calkins, describes a combination club and searchlight. The Calkins patent does not suggest a straight baton with a mushroom cap according to the claimed invention.

U.S. Patent No. 1,950,369, issued on March 6, 1934 to Maurice A. Klein, describes a baton with a flashlight in the grip portion of the baton. The Klein patent does not suggest a straight baton with a mushroom cap according to the claimed invention.

U.S. Patent No. 2,257,227, issued on September 30, 1941 to Maurice M. Dater, describes a night stick with a light at the end opposite the handle end. The Dater patent does not suggest a straight baton with a mushroom cap according to the claimed invention.

U.S. Patent No. 2,260,639, issued on October 28, 1941 to William A. Powell, describes a billy club with a flashlight at the end opposite the handle end. The Powell patent does not suggest a straight baton with a mushroom cap according to the claimed invention.

U.S. Patent No. 3,737,649, issued on June 5, 1973 to Norman C. Nelson et al., describes a combination baton-flashlight. The Nelson et al. patent does not suggest a straight baton with a mushroom cap according to the claimed invention.

U.S. Patent No. 4,479,171, issued on October 23, 1984 to Gregg B. Mains, describes a side arm baton with a flashlight. The Mains patent does not suggest a straight baton with a mushroom cap according to the claimed invention.

U.S. Patent No. 4,819,137, issued on April 4, 1989 to Robert J. Hamilton, describes a multi-purpose self defense baton with a flashlight connected within the handle portion of the baton. The Hamilton patent does not suggest a straight baton with a mushroom cap according to the claimed invention.

U.S. Patent No. 5,060,123, issued on October 22, 1991 to Charles S. Arnold, describes a billy with a flashlight in a twist-on flashlight. The Arnold patent does not suggest a straight baton with a mushroom cap according to the claimed invention.

U.S. Patent No. 5,086,377, issued on February 4, 1992 to Bert Roberts, describes a non-lethal self defense weapon with a centrally positioned grip and a flashlight at one end of the

weapon. The Roberts patent does not suggest a straight baton with a mushroom cap according to the claimed invention.

U.S. Patent No. 5,160,140, issued on November 3, 1992 to Paul D. Starrett, describes an expandable police baton. The Starrett patent does not suggest a straight baton with a mushroom cap according to the claimed invention.

U.S. Patent No. 5,347,436, issued on September 13, 1994 to Arthur C. Clyde et al., describes a combined flashlight-baton with a flashlight mechanism at one end of the baton. The Clyde et al. patent does not suggest a straight baton with a mushroom cap according to the claimed invention.

U.S. Patent No. 5,529,215, issued on June 25, 1996 to Rondal T. Banks et al., describes a personal defense baton with a defense spray container at one end. The Banks et al. patent does not suggest a straight baton with a mushroom cap according to the claimed invention.

U.S. Patent No. 6,386,726 B1, issued on May 14, 2002 to Glenn E. Macierowski et al., describes a hand-held personal defense/police baton that includes an elongated, telescoping main cylinder having an extendable first end and a second end including a rounded, shatterproof light that is secondarily useable for jabbing maneuvers, the disclosure of which is incorporated herein by reference. The Macierowski et al. patent does not suggest a straight baton with a mushroom cap according to the claimed invention.

Germany Patent Application Publication No. DE 38 08 362 A1, published on October 13, 1988, describes a multipurpose baton.

The Germany '362 application does not suggest a straight baton with a mushroom cap according to the claimed invention.

Germany Patent Application Publication No. DE 38 11 037 A1, published on October 12, 1989, describes a walking stick which includes a light source arranged so the stick can serve as a warning lamp and can light up the user's path. The Great Britain '443 application does not suggest a straight baton with a mushroom cap according to the claimed invention.

None of the above inventions and patents, taken either singly or in combination, is seen to describe the instant invention as claimed. Thus a straight baton with a mushroom cap solving the aforementioned problems is desired.

#### SUMMARY OF THE INVENTION

The present invention is a straight baton with a bulbous head or mushroom cap. A straight baton includes a bulbous or mushroom shaped cap which releasably receives a light device with a light element, multiple shaft sections including at least first, second, and third shaft sections, and a striking end. The first, second, and third shaft sections are cylindrically shaped, and each shaft section has predetermined inner and outer diameters, a predetermined length, and opposing ends. The inner diameter of the first shaft section is larger than the outer diameter of the second shaft section, and the inner diameter of the second shaft section is larger than the outer diameter of the third shaft section. The first shaft section is configured to enable the second shaft section to releasably retract into or

extend out of the first shaft section, and the second shaft section is configured to enable the third shaft section to releasably retract into or extend out of the second shaft section.

5       The cap includes a removable bulbous or mushroom shaped head. The head of the cap releasably receives a light device with a light element. The cap has a threaded end for removably attaching the cap to a threaded end of the first shaft section. The cap also releasably receives a battery power source to power  
10       the light element.

      The head of the cap has a predetermined circular outer diameter that is larger than the predetermined outer diameter of the first shaft section of the baton. The dimensional relationship between the outer diameter of the head of the cap  
15       and the outer diameter of the first shaft section is a critical characteristic of the invention. The fact that the head of the cap has a predetermined circular outer diameter that is larger than the predetermined outer diameter of the first shaft section enables a user to maintain better retention of the baton if the  
20       baton is grabbed by a subject and pulled away from the user. In addition, the dimensional relationship between the outer diameter of the head of the cap and the outer diameter of the first shaft section of the baton aids the user in rapidly retrieving the baton when the baton is dropped, because if the baton is dropped on the ground, inclined or not, the baton will circle about the striking end of the baton and will not roll away in a longitudinal manner. A portion of the head is transparent to

allow the light element to emit light through the transparent portion of the head.

5 The side handle enables an individual, such as a law enforcement individual, the versatility of choosing between a straight handle baton and a side handle baton according to their needs. The side handle also enables an individual to be equipped with three tools that may be actuated with a single hand.

10 Accordingly, it is a principal aspect of the invention to provide a straight baton including a cap which releasably receives a light device with a light element, multiple shaft sections including at least first, second, and third shaft sections, and a striking end.

15 It is another aspect of the invention to provide a straight baton including a cap which releasably receives a light device with a light element, multiple shaft sections including at least first, second, and third shaft sections, and a striking end, wherein said first, second, and third shaft sections are cylindrically shaped, and each shaft section has predetermined inner and outer diameters, a predetermined length, and opposing ends, wherein the inner diameter of the first shaft section is larger than the outer diameter of the second shaft section, and the inner diameter of the second shaft section is larger than the outer diameter of the third shaft section, the first shaft section being configured to enable the second shaft section to releasably retract into or extend out of the first shaft section, and the second shaft section being configured to enable the third

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shaft section to releasably retract into or extend out of the second shaft section.

It is a further aspect of the invention to provide a straight baton including a cap which releasably receives a light device with a light element, multiple shaft sections including at least first, second, and third shaft sections, and a striking end, wherein the cap includes a bulbous/mushroom shaped head which releasably receives the light device and the light element, the cap having a threaded end for removably attaching the cap to a threaded end of the first shaft section, and the cap being configured for releasably receiving a battery power source to power the light element.

Still another aspect of the invention is to provide a straight baton including a cap which releasably receives a light device with a light element, multiple shaft sections including at least first, second, and third shaft sections, and a striking end, wherein the cap includes a bulbous/mushroom shaped head having a predetermined circular outer diameter that is larger than a predetermined outer diameter of the first shaft section of the baton to enable a user to maintain better retention of the baton if the baton is grabbed by a subject and pulled away from the user, and to aid the user in rapidly retrieving the baton when the baton is dropped.

Yet another aspect of the invention is to provide a straight baton in combination with a side handle, the baton including a cap which releasably receives a light device with a light element, multiple shaft sections including at least first,

second, and third shaft sections, and a striking end, and the side handle the side handle including a gripping portion and a stepped top with a canopy cover, a spray canister, a connection device, the spray canister being configured to carry a chemical eye irritant, and the connection device being configured to interconnect the side handle with the straight baton.

It is an aspect of the invention to provide improved elements and arrangements thereof for the purposes described which is inexpensive, dependable and fully effective in accomplishing its intended purposes.

These and other aspects of the present invention will become readily apparent upon further review of the following specification and drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a front perspective view of a straight baton in an extended position according to the present invention.

Fig. 2A is a side view of the straight baton shown in Fig. 1 in an extended position.

Fig. 2B is a side view of the straight baton shown in Fig. 1 in a retracted position.

Fig. 2C is a side view of the mushroom cap of the straight baton in Fig. 1.

Fig. 3A is an exploded front perspective view of the straight baton shown in Fig. 1.

Fig. 3B is a front perspective view of the mushroom cap of the straight baton shown in Fig. 1.

Fig. 4 is a cross sectional view of a removable side handle for the straight baton shown in Fig. 1.

5 Fig. 5 is a cross sectional side view of the removable side handle shown in Fig. 4 attached to the straight baton shown in Fig. 1.

Similar reference characters denote corresponding features consistently throughout the attached drawings.

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#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

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The present invention is a straight baton with a mushroom cap. The invention disclosed herein is, of course, susceptible of embodiment in many different forms. Shown in the drawings and described herein below in detail are preferred embodiments of the invention. It is to be understood, however, that the present disclosure is an exemplification of the principles of the invention and does not limit the invention to the illustrated embodiments.

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Referring to the drawings, Fig. 1 shows a straight baton 10 according to the invention. The baton 10 includes a cap 20, multiple shaft sections 30, 40, 60, and a striking end 70. The multiple shaft sections 30, 40, 60 are cylindrically shaped. Each shaft section 30, 40, 60 has predetermined inner and outer

diameters, a predetermined length, and opposing ends. The inner diameter of the first shaft section 30 is larger than the outer diameter of the second shaft section 40, and the inner diameter of the second shaft section 40 is larger than the outer diameter of the third shaft section 60. The first shaft section 30 is configured to enable the second shaft section 40 to releasably retract into or extend out of the first shaft section 30, and the second shaft section 40 is configured to enable the third shaft section 60 to releasably retract into or extend out of the second shaft section 30. As such, the first shaft section 30 is configured to releasably receive the second and third shaft sections 40, 60. For example, the baton 10 may have an overall length of about twenty-four inches when second and third shaft sections 40, 60 are fully extended from the first shaft section 30, and may have an overall length of about twelve inches when the second and third shaft sections 40, 60 are fully retracted into the first shaft section 30.

As illustrated in Fig. 3A, the cap 20 includes a removable bulbous or mushroom shaped head 12. The head 12 of the cap 20 releasably receives a light device 16 with a light element 18 which may be any type of light element, such as an incandescent light, a light emitting diode, a halogen light, etc. The cap 20 has a threaded end 22 for removably attaching the cap 20 to a

threaded end 34 of the first shaft section 30. The cap 20 also releasably receives a chargeable and/or re-chargeable battery power source 24 (see Fig. 5) to power the light element 18.

5 The head 12 of the cap 20 has a predetermined circular outer diameter that is larger than the predetermined outer diameter of the first shaft section 30 of the baton 10. The dimensional relationship between the outer diameter of the head of the cap and the outer diameter of the first shaft section 30 is a critical characteristic of the invention. The fact that the  
10 head 12 of the cap 20 has a predetermined circular outer diameter that is larger than the predetermined outer diameter of the first shaft section 30 enables a user to maintain better retention of the baton 10 if the baton 10 is grabbed by a subject and pulled away from the user. In addition, the dimensional relationship  
15 between the outer diameter of the head 12 of the cap 20 and the outer diameter of the first shaft section 30 of the baton aids the user in rapidly retrieving the baton 10 when the baton 10 is dropped, because if the baton 10 is dropped on the ground, inclined or not, the baton will circle about the striking end 70  
20 of the baton 10 and will not roll away in a longitudinal manner.

A portion of the head 12 is transparent to allow the light element 18 to emit light through the transparent portion of the head 12. The transparent portion of the head 12 is formed of shock resistant and durable material, such as transparent

polycarbonate, LEXAN, etc. The remainder of the cap 20 and head 12 are formed of shock resistant and durable material such as aluminum, steel, etc., to enable the cap 20 and head 12 to be shock resistant and weatherproof to withstand daily climate changes and striking maneuvers administered by a user.

The first shaft section 30 of the baton 10 includes ends 34 and 36. The first shaft section 30 also includes an aperture 32 defined in the side of the first shaft section proximate the end 36. The end 34 is threaded and is configured for releasably receiving the threaded end 22 of the cap 20. The second shaft section 40 of the baton includes ends 44 and 50, and an aperture 42 defined in the side of the second shaft section 40 proximate the end 50. The second shaft section 40 also includes a spring plunger mechanism 46 and split rings and/or O-rings 48. The spring plunger mechanism 46 is configured to lock the second shaft section 40 into an extended position via aperture 32 of the first shaft section 30 when the second shaft section 40 extends from the first shaft section 30. The split rings and/or O-rings 48 form a shock absorber stop mechanism for the baton 10 when opened with force (e.g., the second and third shaft sections 40, 60 extend from the first shaft section 30 with force).

5 The third shaft section 60 of the baton 10 includes ends 64 and 68. The end 68 is threaded to releasably receive the threaded end 72 of the striking end 70. The third shaft section 60 also includes a spring plunger mechanism 64 and split rings and/or O-rings 66. The spring plunger mechanism 64 is configured to lock the third shaft section 60 into an extended position via aperture 42 of the second shaft section 40 when the third shaft section 60 extends from the second shaft section 40. The split rings and/or O-rings 66 form a shock absorber stop mechanism for the baton 10 when opened with force as described above. Other than the split and/or O-rings 48, 66, the first, second, and third shaft sections 30, 40, 60 of the baton 10 are formed of shock resistant and durable material such as aluminum, steel, etc.

10 The spring plunger mechanisms 46, 64 of the second and third shaft sections 40, 60 each have a dual function which allows air to be released and let in while the shaft sections 40, 60 are extended from and/or retracted into the baton 10, and allows the shaft sections 40, 60 to smoothly extend from and retract into the baton 10. When the baton is extended to full capacity, the spring plunger mechanisms 46, 64 of the second and third shaft sections 40, 60, lock the sections 40, 60 into place and cannot

be retracted until the user pushes the plunger mechanisms 46, 64 down and collapses the shaft sections 40, 60.

5 The striking end 70 of the baton 10 is preferably made of metal and may be configured in a variety of sizes to enable a user to interchanging various size striking ends 70 to optimize the range and effectiveness of strikes of the baton 10 made by the user. The striking end 70 is preferably rounded or shaped in a way such that there are no arcuate edges to prevent cutting and/or ripping of the flesh. The striking end 70 of the baton 10 includes a threaded end 72 configured for releasably enaging with the threaded end 68 of the third shaft section.

10 Figs. 4 and 5 illustrate an example of a side handle 100 which may be attached to the side of the straight baton 10. However, other side handles may be configured for being attached to the straight baton 10. The side handle 100 includes a gripping portion 110 and a stepped top 112 with a canopy cover 114. A spray canister 118 and a connection device 120 are contained within this particular side handle 100. The spray canister 118 is preferably a standard 3/4 ounce canister, but may be any type of spray canister. The connection device 120 is configured to interconnect the side handle 100 with the straight baton 10, and is configured to carry a chemical eye irritant, such as Mace® or the like.



A spray actuator 130 is attached to the top of the spray canister 118. The spray actuator 130 is a one piece injection molded item, and may be injection molded from durable material, such as polycarbonate material, etc. The spray actuator 130 includes a base portion 132 with an inner diameter form fitted for compressively receiving the top of the spray canister 118. The spray actuator 130 also includes an L-shaped channel 138 contained within the gripping portion 110 of the side handle 100. The spray actuator 130 includes a safety flap 140, a built-in hinge point 142, and a squared off forward section 144.

The L-shaped channel 138 leads to a nozzle under the squared off forward section 144. The squared off forward section 144 is configured to enable the spray actuator to be placed in the side handle in only one direction. The squared off forward section 144 is also configured to hold the spray actuator 130 and the canister 118 in place while inside the side handle so a user can still administer offensive and defensive maneuvers without having to worry about the spray canister 118 popping out of the side handle 100. The nozzle is configured to release fluid from the spray canister at a predetermined angle associated with the direction of light emitted from the light element 18 of the baton 10.

The safety flap 140 of the spray actuator 130 remains in the down position until a user flips up the safety flap 140 with their thumb/finger to access a push button 136 on the spray actuator 130. If a user pulls their thumb/finger away from the push button 136 and safety flap 140, the continued resistance on the safety flap 140 will automatically close the safety flap 140 and cover the push button 136 to prevent accidental discharge of liquid from the spray canister 118. The safety flap 140 also has an aperture defined in the safety flap at the end opposite the squared off end 144. This aperture is configured for use in conjunction with the canopy top 114 of the side handle 100. The canopy cover 114 has a spring pin which engages the aperture on the safety flap when the canopy cover is in a closed position. When the spring pin engages the aperture of the safety flap, the user is able to push the canopy cover forward to access the safety flap and push button and then pull the canopy cover rearward. However, the user is unable to freely pull the canopy cover rearward until they press the spring pin up and release the canopy cover.

The side handle 100 enables an individual, such as a law enforcement individual, the versatility of choosing between a straight handle baton and a side handle baton according to their needs. The side handle 100 also enables an individual to be

equipped with three tools that may be actuated with a single hand.

While the invention has been described with references to its preferred embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the true spirit and scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teaching of the invention without departing from its essential teachings.